REMARKS

Present Status of the Application

The Office action objected to the amendment filed 6/26/08 under 35 U.S.C. 132(a) because it introduces new matter into the disclosure.

The Office action rejected claims 7 and 8 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

The Office action rejected claims 1-8, 12 and 13 under 35 U.S.C 103(a) as being unpatentable over the state of the prior art admitted by the Applicants (hereinafter AAPA) in the specification in view of Verhaverbeke et al. (US Publication No. 2003/0045098) and Verhaverbeke et al. (US Patent No. 6,491,763) further in view of Chang (US Publication No. 2002/0020432)

In response thereto, Applicants have amended claim 1 to more clearly define the claimed invention and respectfully traverse all said objection and rejections on the grounds set forth in detail below. In addition, Applicants note that in the amendment filed 6/26/08, the statement of substituting "to" with "with" in the last paragraph of the section "**Discussions of 35 U.S.C. 112 Rejections**" is a typographical error and should be neglected; said paragraph should actually recite:

> "In response thereto, Applicants submit that the lack of enablement in claims 7 and 8 is due to typographical errors and have amended the technical feature "**1:1-5:4-80**" to "**4-80:1-5:1**", as set forth in claim 7. Likely, claim 8 is amended by replacing the technical feature "**2.1:3.1:80**" with "**80:3.1:2.1**". The disclosure of the specification has also been amended for consistency. It should be appreciated by one skilled in the art that aqueous solution contains an adequate proportion of H_2O, therefore the proportions in claims 7 and 8 are obvious typographical errors".

Upon entry of the foregoing amendments, Applicants respectfully submit that all the pending claims 1-8, 12 and 13 are placed in proper condition for allowance, and reconsideration of all the pending claims is respectfully requested.

Response to Objection to the Amendment

The amendment filed 6/26/08 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure.

In response thereto, Applicants respectfully traverse said objection on the grounds set forth in detail below.

As known to persons having ordinary skills in the art, since ammonium hydroxide (NH_4OH) is defined as the solution of ammonia (NH_3) in water and has a base ionization constant (K_b) of 1.8×10^{-5}, it is **impossible** to maintain a mixture of H_2O:H_2O_2:NH_4OH wherein the proportions thereof is 1:1-5:4-80. Also known to persons having ordinary skills in the art is that hydrogen chloride (HCl) has a maximum solubility in water of 72 g/100 ml, so that it is also **impossible** to maintain a mixture of H_2O:H_2O_2: HCl wherein the proportions thereof is 1:1-5:4-80.

Moreover, the Office action dated 2/26/08 stated that "claims 7 and 8 recite the concentrations of ammonium hydroxide, which include the concentrations of the ammonium hydroxide, which could not be obtained in aqueous solutions". Hence, Applicants believe that the Office action dated 2/26/08 also acknowledged that the above proportions are impossible and are merely typographical errors.

Therefore, Applicants respectfully assert that the amendment filed 6/26/08 does

not introduce new matter due to the fact that the correction of the proportions in the amendment are merely corrections of **obvious typographical errors** which any persons having ordinary skills in the art would easily recognize.

Response to Claim Rejections under 35 U.S.C. 112, First Paragraph

Claims 7 and 8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

In response thereto, Applicants respectfully traverse said rejections on the grounds set forth in detail below.

As mentioned above, since the amendment filed 6/26/08 does not introduce new matter, the amendments to the specification are allowable. Hence, Applicants respectfully submit that claims 7 and 8 comply with the written description requirement and are allowable under 35 U.S.C. 112, first paragraph, since the proportions disclosed in claims 7 and 8 are supported by paragraph [0031] of the amended specification.

Response to Claim Rejections under 35 U.S.C. 103(a)

Claims 1-8, 12 and 13 are rejected under 35 U.S.C 103(a) as being unpatentable over AAPA in the specification in view of Verhaverbeke et al. (US Publication No. 2003/0045098) and Verhaverbeke et al. (US Patent No. 6,491,763) further in view of Chang.

In response thereto, Applicants have amended claim 1 to more clearly define the claimed invention and respectfully traverse all said rejections based on the grounds set

forth in detail below.

As disclosed in the specification, the RCA cleaning procedure according to the prior art includes three major steps to be performed sequentially: 1) removal of insoluble organic contaminants with a 5:1:1 H_2O:H_2O_2:NH_4OH solution (the standard cleaning solution, referred to as SC1); 2) removal of a thin silicon dioxide layer where metallic contaminants may accumulate as a result of 1), using a diluted 50:1 H_2O:HF solution; and 3) removal of ionic and heavy metal atomic contaminants using a solution of 6:1:1 H_2O:H_2O_2:HCl (the standard cleaning solution, referred to as SC2).

On the other hand, currently amended claim 1 now contains the limitations reciting:

> "performing a cleaning process to the semiconductor wafer, wherein the cleaning process is **consisting of** following steps:
>
> rinsing the semiconductor wafer including the gate structure using an ozonated de-ionized (DI) water;
>
> further rinsing the ozonated water-rinsed semiconductor wafer using a first cleaning solution, wherein the first cleaning solution is a **HF:HCl:H_2O solution or at least one of H_2O:H_2O_2:NH_4OH solution and H_2O:H_2O_2:HCl solution**"

Hence, the **H_2O/HF solution** used in the RCA cleaning procedure **is not used** in claim 1 of the present application, so that the present application does not require preparing **all the cleaning solutions** used in the prior art. Therefore in the present application, processes are simplified, costs are lowered, yields are increased and defects are reduced.

In light of the above, **the present application does not use all the cleaning solutions used in the RCA cleaning procedure, and hence the cleaning solutions used in the present application are different from the cleaning solutions used in the RCA cleaning procedure**.

Therefore, even in consideration of Verhaverbeke et al. (US Publication No. 2003/0045098), Verhaverbeke et al. (US Patent No. 6,491,763) and Chang, the combination of the AAPA, Verhaverbeke et al. (US Publication No. 2003/0045098), Verhaverbeke et al. (US Patent No. 6,491,763) and Chang still fails to teach or suggest the above limitations of claims 1 and further of claims 2-8, 12 and 13 dependent thereon. Therefore, Applicants respectfully assert that claims 1-8, 12 and 13 are non-obvious over the AAPA, Verhaverbeke et al. (US Publication No. 2003/0045098), Verhaverbeke et al. (US Patent No. 6,491,763) and Chang, taken alone or in combination, and accordingly traverse the rejection of claim 1 under 35 U.S.C. 103(a).

Since claim 1 is allowable, claims 2-8, 12 and 13 dependent thereon should also be allowed for they contain all the limitations of their respective independent claims. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

CONCLUSION

For at least the foregoing reasons, it is believed that all the pending claims 1-8, 12 and 13 patently define over the prior art and are in proper condition for allowance. An action to such effect is most earnestly requested. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

Respectfully submitted,

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